

CS4471
Lab Assignment 4
Cisco Router & Switch Configuration

Group Number: 18

Group Members:

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Connect your router to the network as shown in the network topology drawing. Connect a rollover cable from the console port of the Cisco 1600 (or 2500) router to a 9-pin serial port on a computer. Download Putty or Teraterm communication software from Internet onto your computer and configure the terminal emulation software to 9600 bps, 8 data bits, no parity, and 1 stop bit. From the software program, verify that you can connect to the router console prompt and get into enable mode. Reset the router to its factory default state by executing “erase startup-config” and “reload” commands. If you are not able to log into the router, see step-by-step instructions for resetting the password at <http://cs3.calstatela.edu/~egean/cs447/cisco1600-passwd-reset.html>. Configure the Ethernet interface on the router with IP address specified in network topology drawing. Your router’s default gateway address and default route should be set to 10.86.44.1. Change the hostname of your router to RouterXY (where XY is your group number). Change the default router gateway of your computer’s virtual operating system from 10.86.44.1 to the IP address of the Ethernet interface of your Cisco 1600 (or 2500) router. From a command prompt on your computer, verify that you can ping the Cisco 1600 (or 2500) router’s Ethernet interface and have connectivity to the Internet.

1. (20 pts) Simulate a wide-area-network connection by connecting the WAN ports of two Cisco routers together via two V.35 serial cables (or one crossover serial cable). DCE side needs clock rate set. Configure the IP address of the WAN serial port (s0) with IP address specified in network topology drawing. Netmask should be 255.255.255.0. From a command prompt on your computer, verify that you can ping your own WAN interface (192.168.x.x) on your Cisco 1600 (or 2500) router. Verify that you can ping the other endpoint (192.168.x.y on neighbor’s s0) of your WAN connection. Submit a screen capture of the output of a successful traceroute command from your computer’s command prompt to the other WAN endpoint (192.168.x.y) of your router’s WAN connection.

```
COM1 - PuTTY

^
% Invalid input detected at '^' marker.

Router18>config terminal
^
% Invalid input detected at '^' marker.

Router18>enable
Router18#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router18(config)#interface Ethernet0
Router18(config-if)#ip address 10.86.44.160 255.255.255.0
Router18(config-if)#no shutdown
Router18(config-if)#exit
Router18(config)#interface Serial0
Router18(config-if)#ip address 192.168.30.2 255.255.255.0
Router18(config-if)#no shutdown
Router18(config-if)#exit
Router18(config)#
01:03:51: %LINK-3-UPDOWN: Interface Serial0, changed state to up
01:03:52: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0, changed state to up
01:04:17: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0, changed state to down

C:\windows\system32\cmd.exe

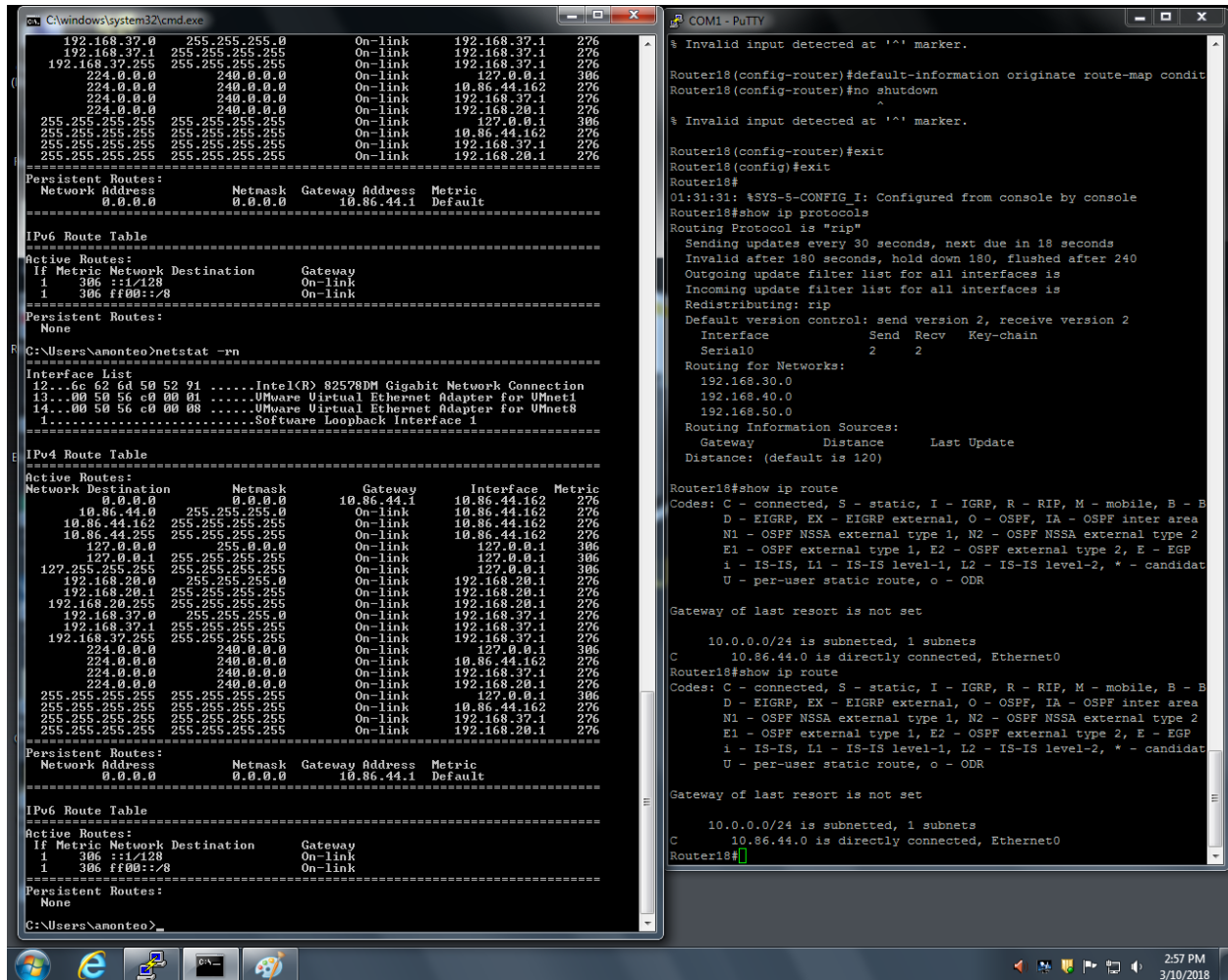
C:\Users\amonte>tracert 192.168.30.1
Tracing route to 192.168.30.1 over a maximum of 30 hops
  0  1 ms    <1 ms   <1 ms   10.86.44.1
  1  <1 ms   <1 ms   <1 ms   192.168.158.1
  2  1 ms    1 ms    1 ms    cla-pa5060a-inside.calstatela.edu [192.168.153.254]
  3  1 ms    1 ms    1 ms    cla-ad-5a-border-6900r.calstatela.edu [130.182.11.252]
  4  *       *       *       Request timed out.
  5  *       *       *       Request timed out.
  6  *       *       *       Request timed out.
  7  *       *       *       Request timed out.
  8  *       *       *       Request timed out.
  9  dc-lax-agg6-la-csu-sw-3-cmf.cenic.net [137.164.50.73] reports: Destination net unreachable.

Trace complete.

C:\Users\amonte>
```

2. (20 pts) Turn on RIP version 2 so that your router will learn how to reach other indirectly connected networks in the lab.

a. Submit a screenshot of your router's routing table. It should contain RIP routes advertised by five other networks (192.168.x.0) in the lab. Work with your fellow classmates if needed.



```
C:\windows\system32\cmd.exe
192.168.37.0 255.255.255.0 On-link 192.168.37.1 276
192.168.37.1 255.255.255.255 On-link 192.168.37.1 276
192.168.37.255 255.255.255.255 On-link 192.168.37.1 276
224.0.0.0 240.0.0.0 On-link 127.0.0.1 306
224.0.0.0 240.0.0.0 On-link 10.86.44.162 276
224.0.0.0 240.0.0.0 On-link 192.168.37.1 276
224.0.0.0 240.0.0.0 On-link 192.168.20.1 276
255.255.255.255 255.255.255.255 On-link 127.0.0.1 306
255.255.255.255 255.255.255.255 On-link 10.86.44.162 276
255.255.255.255 255.255.255.255 On-link 192.168.37.1 276
255.255.255.255 255.255.255.255 On-link 192.168.20.1 276

Persistent Routes:
Network Address Netmask Gateway Address Metric
0.0.0.0 0.0.0.0 10.86.44.1 Default

IPv6 Route Table
=====
Active Routes:
If Metric Network Destination Gateway
1 306 ::1/128 On-link
1 306 ff00::8 On-link

Persistent Routes:
None

C:\Users\amonteo>netstat -rn

Interface List
12...62 6d 50 52 91 .....Intel(R) 82578DM Gigabit Network Connection
13...00 50 56 c0 00 01 .....VMware Virtual Ethernet Adapter for VMnet1
14...00 50 56 c0 00 08 .....VMware Virtual Ethernet Adapter for VMnet8
1.....Software Loopback Interface 1

IPv4 Route Table
=====
Active Routes:
Network Destination Netmask Gateway Interface Metric
0.0.0.0 0.0.0.0 10.86.44.1 10.86.44.162 276
10.86.44.0 255.255.255.255 On-link 10.86.44.162 276
10.86.44.162 255.255.255.255 On-link 10.86.44.162 276
127.0.0.0 255.255.255.255 On-link 127.0.0.1 306
127.0.0.1 255.255.255.255 On-link 127.0.0.1 306
127.255.255.255 255.255.255.255 On-link 127.0.0.1 306
192.168.20.0 255.255.255.0 On-link 192.168.20.1 276
192.168.20.1 255.255.255.255 On-link 192.168.20.1 276
192.168.20.255 255.255.255.255 On-link 192.168.20.1 276
192.168.37.0 255.255.255.0 On-link 192.168.37.1 276
192.168.37.1 255.255.255.255 On-link 192.168.37.1 276
192.168.37.255 255.255.255.255 On-link 192.168.37.1 276
192.168.37.255 255.255.255.255 On-link 192.168.37.1 276
224.0.0.0 240.0.0.0 On-link 127.0.0.1 306
224.0.0.0 240.0.0.0 On-link 10.86.44.162 276
224.0.0.0 240.0.0.0 On-link 192.168.37.1 276
224.0.0.0 240.0.0.0 On-link 192.168.20.1 276
255.255.255.255 255.255.255.255 On-link 127.0.0.1 306
255.255.255.255 255.255.255.255 On-link 10.86.44.162 276
255.255.255.255 255.255.255.255 On-link 192.168.37.1 276
255.255.255.255 255.255.255.255 On-link 192.168.20.1 276

Persistent Routes:
Network Address Netmask Gateway Address Metric
0.0.0.0 0.0.0.0 10.86.44.1 Default

IPv6 Route Table
=====
Active Routes:
If Metric Network Destination Gateway
1 306 ::1/128 On-link
1 306 ff00::8 On-link

Persistent Routes:
None

C:\Users\amonteo>
```

```
COM1 - PuTTY
% Invalid input detected at '^' marker.

Router18(config-router)#default-information originate route-map condit
Router18(config-router)#no shutdown
^
% Invalid input detected at '^' marker.

Router18(config-router)#exit
Router18(config)#exit
Router18#
01:31:31: %SYS-5-CONFIG I: Configured from console by console
Router18#show ip protocols
Routing Protocol is "rip"
  Sending updates every 30 seconds, next due in 18 seconds
  Invalid after 180 seconds, hold down 180, flushed after 240
  Outgoing update filter list for all interfaces is
  Incoming update filter list for all interfaces is
  Redistributing: rip
  Default version control: send version 2, receive version 2
    Interface Send Recv Key-chain
      Serial0 2 2
  Routing for Networks:
    192.168.30.0
    192.168.40.0
    192.168.50.0
  Routing Information Sources:
    Gateway Distance Last Update
  Distance: (default is 120)

Router18#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - B
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       I - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, * - candidat
       U - per-user static route, o - ODR

Gateway of last resort is not set

  10.0.0.0/24 is subnetted, 1 subnets
C    10.86.44.0 is directly connected, Ethernet0
Router18#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - B
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       I - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, * - candidat
       U - per-user static route, o - ODR

Gateway of last resort is not set

  10.0.0.0/24 is subnetted, 1 subnets
C    10.86.44.0 is directly connected, Ethernet0
Router18#
```

b. From your computer's command prompt, do a traceroute to the serial WAN interface of another group's router whose network was learned by your router via RIP version 2. Submit a screenshot of the result of the traceroute.

The screenshot shows a Windows desktop environment. In the foreground, a command prompt window titled 'C:\Windows\system32\cmd.exe' displays the following output:

```

122.255.255.255 255.255.255.255 On-link 122.0.0.1 306
192.168.20.0 255.255.255.0 On-link 192.168.20.1 276
192.168.20.1 255.255.255.255 On-link 192.168.20.1 276
192.168.37.0 255.255.255.255 On-link 192.168.37.1 276
192.168.37.1 255.255.255.255 On-link 192.168.37.1 276
192.168.37.255 255.255.255.255 On-link 192.168.37.1 276
224.0.0.0 240.0.0.0 On-link 122.0.0.1 306
224.0.0.0 240.0.0.0 On-link 10.86.44.162 276
224.0.0.0 240.0.0.0 On-link 192.168.37.1 276
224.0.0.0 240.0.0.0 On-link 192.168.20.1 276
255.255.255.255 255.255.255.255 On-link 122.0.0.1 306
255.255.255.255 255.255.255.255 On-link 10.86.44.162 276
255.255.255.255 255.255.255.255 On-link 192.168.37.1 276
255.255.255.255 255.255.255.255 On-link 192.168.20.1 276
=====
Persistent Routes:
Network Address Netmask Gateway Address Metric
0.0.0.0 0.0.0.0 10.86.44.1 Default
=====
IPv6 Route Table
=====
Active Routes:
If Metric Network Destination Gateway
1 306 ::1/128 On-link
1 306 f100::/0 On-link
=====
Persistent Routes:
None
C:\Users\anonteo>tracert 192.168.30.1
Tracing route to 192.168.30.1 over a maximum of 30 hops
  0  1 ms  <1 ms  <1 ms  10.86.44.1
  1  <1 ms  <1 ms  <1 ms  192.168.158.1
  2  1 ms  <1 ms  1 ms  cla-pa5060a-inside.calstatela.edu [192.168.153.54]
  3  1 ms  1 ms  1 ms  cla-ad-5a-border-6900r.calstatela.edu [130.182.1.252]
  4  1 ms  1 ms  1 ms  de-lax-agg6-la-csu-sw-3-cmf.cenic.net [137.164.50.73] reports: Destination unreachable.
Trace complete.
C:\Users\anonteo>

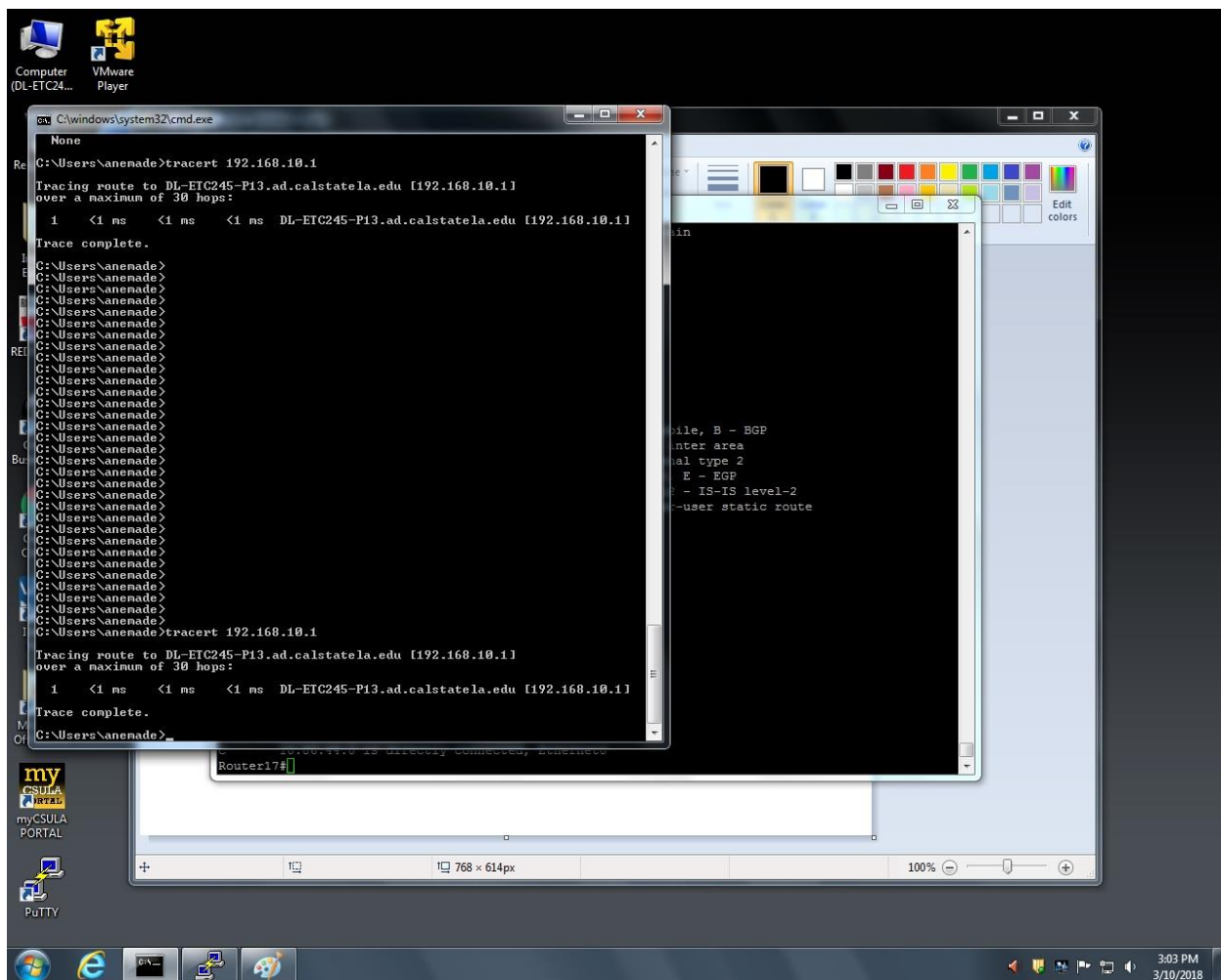
```

In the background, a PuTTY window titled 'COM1 - PuTTY' shows the output of the traceroute command, displaying the path of the packet and the IP addresses of the hops:

```

02:11:48: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:11:48: UDP src=42295, dst=33502 *
24
02:11:51: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:11:51: UDP src=37717, dst=33503 *
02:11:54: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:11:54: UDP src=37602, dst=33504 *
02:11:57: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:11:57: UDP src=42640, dst=33505 *
25
02:12:00: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:12:00: UDP src=33288, dst=33506 *
02:12:03: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:12:03: UDP src=36553, dst=33507 *
02:12:06: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:12:06: UDP src=40067, dst=33508 *
26
02:12:09: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:12:09: UDP src=34910, dst=33509 *
02:12:12: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:12:12: UDP src=40555, dst=33510 *
02:12:15: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:12:15: UDP src=37461, dst=33511 *
27
02:12:18: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:12:18: UDP src=36376, dst=33512 *
02:12:21: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:12:21: UDP src=41198, dst=33513 *
02:12:24: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:12:24: UDP src=38415, dst=33514 *
28
02:12:27: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:12:27: UDP src=32823, dst=33515 *
02:12:30: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:12:30: UDP src=40189, dst=33516 *
02:12:33: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:12:33: UDP src=34555, dst=33517 *
29
02:12:36: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:12:36: UDP src=34556, dst=33518 *
02:12:39: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:12:39: UDP src=36961, dst=33519 *
02:12:42: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:12:42: UDP src=33936, dst=33520 *
30
02:12:45: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:12:45: UDP src=40731, dst=33521 *
02:12:48: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:12:48: UDP src=37952, dst=33522 *
02:12:51: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:12:51: UDP src=39950, dst=33523 *
Router16#

```



Results:

Tracing the route to

```
02:08:15: IP: s=10.86.44.160 (local), d=255.255.255.255 (Ethernet0), len 71, sending broad/multicast
02:08:15:   UDP src=51188, dst=53
02:08:15: IP: s=192.168.30.2 (local), d=255.255.255.255 (Serial0), len 71, sending broad/multicast
02:08:15:   UDP src=51188, dst=53
02:08:18: IP: s=10.86.44.212 (Ethernet0), d=10.86.44.255 (Ethernet0), len 298, rcvd 3
02:08:18:   UDP src=138, dst=138
02:08:18: IP: s=10.86.44.160 (local), d=255.255.255.255 (Ethernet0), len 71, sending broad/multicast
02:08:18:   UDP src=51188, dst=53
02:08:18: IP: s=192.168.30.2 (local), d=255.255.255.255 (Serial0), len 71, sending broad/multicast
02:08:18:   UDP src=51188, dst=53
02:08:21: IP: s=10.86.44.160 (local), d=255.255.255.255 (Ethernet0), len 71, sending broad/multicast
02:08:21:   UDP src=51188, dst=53
02:08:21: IP: s=192.168.30.2 (local), d=255.255.255.255 (Serial0), len 71, sending broad/multicast
02:08:21:   UDP src=51188, dst=53192.168.40.1
```

1

```
02:08:24: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:08:24:   UDP src=40841, dst=33434 *
```

02:08:27: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable

02:08:27: UDP src=33781, dst=33435 *

02:08:30: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable

02:08:30: UDP src=33241, dst=33436 *

2

02:08:33: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable

02:08:33: UDP src=34950, dst=33437 *

02:08:36: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable

02:08:36: UDP src=36943, dst=33438 *

02:08:38: IP: s=10.86.44.112 (Ethernet0), d=10.86.44.255 (Ethernet0), len 78, rcvd 3

02:08:38: UDP src=137, dst=137

02:08:39: IP: s=10.86.44.112 (Ethernet0), d=10.86.44.255 (Ethernet0), len 78, rcvd 3

02:08:39: UDP src=137, dst=137

02:08:39: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable

02:08:39: UDP src=40265, dst=33439

02:08:40: IP: s=10.86.44.112 (Ethernet0), d=10.86.44.255 (Ethernet0), len 78, rcvd 3

02:08:40: UDP src=137, dst=137 *

3

02:08:42: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable

02:08:42: UDP src=34709, dst=33440 *

02:08:45: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable

02:08:45: UDP src=40480, dst=33441 *

02:08:48: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable

02:08:48: UDP src=42214, dst=33442 *

4

02:08:51: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable

02:08:51: UDP src=40847, dst=33443 *

02:08:54: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable

02:08:54: UDP src=37948, dst=33444 *

02:08:57: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable

02:08:57: UDP src=39519, dst=33445 *

5

02:09:00: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable

02:09:00: UDP src=39163, dst=33446 *

02:09:03: IP: s=10.86.44.151 (Ethernet0), d=10.86.44.255 (Ethernet0), len 242, rcvd 3

02:09:03: UDP src=138, dst=138

02:09:03: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable

02:09:03: UDP src=32887, dst=33447 *

02:09:06: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable

02:09:06: UDP src=36374, dst=33448 *

6

02:09:09: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable

02:09:09: UDP src=36595, dst=33449 *

02:09:12: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable

02:09:12: UDP src=38548, dst=33450 *

02:09:15: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable

02:09:15: UDP src=34383, dst=33451 *

7

02:09:18: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable

02:09:18: UDP src=39944, dst=33452 *

02:09:21: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable

02:09:21: UDP src=38904, dst=33453 *

02:09:24: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable

02:09:24: UDP src=34877, dst=33454 *

8

02:09:27: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable

02:09:27: UDP src=40287, dst=33455 *

02:09:30: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable

02:09:30: UDP src=32795, dst=33456 *

02:09:33: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable

02:09:33: UDP src=34224, dst=33457 *

9

02:09:36: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable

02:09:36: UDP src=37085, dst=33458 *

02:09:39: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable

02:09:39: UDP src=39991, dst=33459 *

02:09:42: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable

02:09:42: UDP src=38248, dst=33460 *

10

02:09:45: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable

02:09:45: UDP src=35866, dst=33461 *

02:09:48: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable

02:09:48: UDP src=33435, dst=33462 *

02:09:51: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable

02:09:51: UDP src=38360, dst=33463 *

02:09:54: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:09:54: UDP src=36977, dst=33464 *
02:09:57: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:09:57: UDP src=36339, dst=33465 *
02:10:00: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:10:00: UDP src=39964, dst=33466 *
12
02:10:03: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:10:03: UDP src=35149, dst=33467
02:10:04: IP: s=10.86.44.152 (Ethernet0), d=10.86.44.255 (Ethernet0), len 298, rcvd 3
02:10:04: UDP src=138, dst=138 *
02:10:06: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:10:06: UDP src=33554, dst=33468 *
02:10:09: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:10:09: UDP src=35327, dst=33469 *
13
02:10:12: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:10:12: UDP src=33701, dst=33470 *
02:10:15: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:10:15: UDP src=39017, dst=33471 *
02:10:18: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:10:18: UDP src=35372, dst=33472 *
14
02:10:21: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:10:21: UDP src=41501, dst=33473 *
02:10:24: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:10:24: UDP src=36787, dst=33474 *
02:10:27: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:10:27: UDP src=34731, dst=33475 *
15
02:10:29: IP: s=10.86.44.181 (Ethernet0), d=10.86.44.255 (Ethernet0), len 78, rcvd 3
02:10:29: UDP src=137, dst=137
02:10:30: IP: s=10.86.44.181 (Ethernet0), d=10.86.44.255 (Ethernet0), len 78, rcvd 3
02:10:30: UDP src=137, dst=137
02:10:30: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:10:30: UDP src=37766, dst=33476
02:10:30: IP: s=10.86.44.181 (Ethernet0), d=10.86.44.255 (Ethernet0), len 78, rcvd 3
02:10:30: UDP src=137, dst=137 *
02:10:33: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:10:33: UDP src=34148, dst=33477
02:10:35: IP: s=10.86.44.182 (Ethernet0), d=10.86.44.255 (Ethernet0), len 229, rcvd 3
02:10:35: UDP src=138, dst=138 *
02:10:36: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:10:36: UDP src=33310, dst=33478 *
16
02:10:39: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:10:39: UDP src=34802, dst=33479 *
02:10:42: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:10:42: UDP src=42011, dst=33480 *
02:10:45: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:10:45: UDP src=34080, dst=33481
02:10:47: IP: s=10.86.44.192 (Ethernet0), d=10.86.44.255 (Ethernet0), len 78, rcvd 3
02:10:47: UDP src=137, dst=137
02:10:47: IP: s=10.86.44.192 (Ethernet0), d=10.86.44.255 (Ethernet0), len 78, rcvd 3
02:10:47: UDP src=137, dst=137 *
17
02:10:48: IP: s=10.86.44.192 (Ethernet0), d=10.86.44.255 (Ethernet0), len 78, rcvd 3
02:10:48: UDP src=137, dst=137
02:10:48: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:10:48: UDP src=33125, dst=33482 *
02:10:51: IP: s=10.86.44.172 (Ethernet0), d=10.86.44.255 (Ethernet0), len 78, rcvd 3
02:10:51: UDP src=137, dst=137
02:10:51: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:10:51: UDP src=42691, dst=33483
02:10:52: IP: s=10.86.44.172 (Ethernet0), d=10.86.44.255 (Ethernet0), len 78, rcvd 3
02:10:52: UDP src=137, dst=137
02:10:52: IP: s=10.86.44.172 (Ethernet0), d=10.86.44.255 (Ethernet0), len 78, rcvd 3
02:10:52: UDP src=137, dst=137 *
02:10:54: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:10:54: UDP src=40912, dst=33484 *
18
02:10:57: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:10:57: UDP src=42183, dst=33485 *
02:11:00: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:11:00: UDP src=39336, dst=33486 *
02:11:02: IP: s=10.86.44.181 (Ethernet0), d=10.86.44.255 (Ethernet0), len 298, rcvd 3
02:11:02: UDP src=138, dst=138

02:11:03: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:11:03: UDP src=41700, dst=33487 *
19
02:11:06: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:11:06: UDP src=39098, dst=33488
02:11:06: IP: s=10.86.44.172 (Ethernet0), d=10.86.44.255 (Ethernet0), len 78, rcvd 3
02:11:06: UDP src=137, dst=137
02:11:07: IP: s=10.86.44.172 (Ethernet0), d=10.86.44.255 (Ethernet0), len 78, rcvd 3
02:11:07: UDP src=137, dst=137 *
02:11:08: IP: s=10.86.44.172 (Ethernet0), d=10.86.44.255 (Ethernet0), len 78, rcvd 3
02:11:08: UDP src=137, dst=137
02:11:09: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:11:09: UDP src=35253, dst=33489 *
02:11:12: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:11:12: UDP src=39806, dst=33490 *
20
02:11:15: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:11:15: UDP src=35153, dst=33491 *
02:11:18: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:11:18: UDP src=33161, dst=33492 *
02:11:21: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:11:21: UDP src=32969, dst=33493 *
21
02:11:24: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:11:24: UDP src=36280, dst=33494 *
02:11:27: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:11:27: UDP src=33398, dst=33495 *
02:11:30: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:11:30: UDP src=36444, dst=33496 *
22
02:11:33: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:11:33: UDP src=34775, dst=33497 *
02:11:36: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:11:36: UDP src=42570, dst=33498 *
02:11:39: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:11:39: UDP src=40064, dst=33499 *
23
02:11:42: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:11:42: UDP src=37855, dst=33500 *
02:11:45: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:11:45: UDP src=34727, dst=33501 *
02:11:48: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:11:48: UDP src=42295, dst=33502 *
24
02:11:51: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:11:51: UDP src=37717, dst=33503 *
02:11:54: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:11:54: UDP src=37602, dst=33504 *
02:11:57: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:11:57: UDP src=42640, dst=33505 *
25
02:12:00: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:12:00: UDP src=33288, dst=33506 *
02:12:03: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:12:03: UDP src=36553, dst=33507 *
02:12:06: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:12:06: UDP src=40067, dst=33508 *
26
02:12:09: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:12:09: UDP src=34910, dst=33509 *
02:12:12: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:12:12: UDP src=40555, dst=33510 *
02:12:15: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:12:15: UDP src=37461, dst=33511 *
27
02:12:18: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:12:18: UDP src=36376, dst=33512 *
02:12:21: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:12:21: UDP src=41198, dst=33513 *
02:12:24: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:12:24: UDP src=38415, dst=33514 *
28
02:12:27: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:12:27: UDP src=32823, dst=33515 *
02:12:30: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:12:30: UDP src=40189, dst=33516 *
02:12:33: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable

```

02:12:33:  UDP src=34555, dst=33517 *
29
02:12:36: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:12:36:  UDP src=34556, dst=33518 *
02:12:39: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:12:39:  UDP src=36961, dst=33519 *
02:12:42: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:12:42:  UDP src=33936, dst=33520 *
30
02:12:45: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:12:45:  UDP src=40731, dst=33521 *
02:12:48: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:12:48:  UDP src=37952, dst=33522 *
02:12:51: IP: s=10.86.44.160 (local), d=192.168.40.1, len 28, unroutable
02:12:51:  UDP src=39950, dst=33523 *
Router18#
02:13:56: IP: s=10.86.44.151 (Ethernet0), d=10.86.44.255 (Ethernet0), len 298, rcvd 3
02:13:56:  UDP src=138, dst=138
02:14:22: IP: s=10.86.44.201 (Ethernet0), d=10.86.44.255 (Ethernet0), len 78, rcvd 3
02:14:22:  UDP src=137, dst=137
02:14:22: IP: s=10.86.44.122 (Ethernet0), d=10.86.44.255 (Ethernet0), len 78, rcvd 3
02:14:22:  UDP src=137, dst=137
02:14:22: IP: s=10.86.44.182 (Ethernet0), d=10.86.44.255 (Ethernet0), len 78, rcvd 3
02:14:22:  UDP src=137, dst=137
02:14:23: IP: s=10.86.44.162 (Ethernet0), d=10.86.44.255 (Ethernet0), len 298, rcvd 3
02:14:23:  UDP src=138, dst=138
02:14:23: IP: s=10.86.44.201 (Ethernet0), d=10.86.44.255 (Ethernet0), len 78, rcvd 3
02:14:23:  UDP src=137, dst=137
02:14:23: IP: s=10.86.44.122 (Ethernet0), d=10.86.44.255 (Ethernet0), len 78, rcvd 3
02:14:23:  UDP src=137, dst=137
02:14:23: IP: s=10.86.44.182 (Ethernet0), d=10.86.44.255 (Ethernet0), len 78, rcvd 3
02:14:23:  UDP src=137, dst=137
02:14:24: IP: s=10.86.44.201 (Ethernet0), d=10.86.44.255 (Ethernet0), len 78, rcvd 3
02:14:24:  UDP src=137, dst=137
02:14:24: IP: s=10.86.44.122 (Ethernet0), d=10.86.44.255 (Ethernet0), len 78, rcvd 3
02:14:24:  UDP src=137, dst=137
02:14:24: IP: s=10.86.44.182 (Ethernet0), d=10.86.44.255 (Ethernet0), len 78, rcvd 3

```

3. (20 pts) From your computer, capture and decode RIP version 2 packets advertised by your router.

a. What UDP port number is used by RIP advertisement packets?

RIP uses UDP' assigned port number: 520

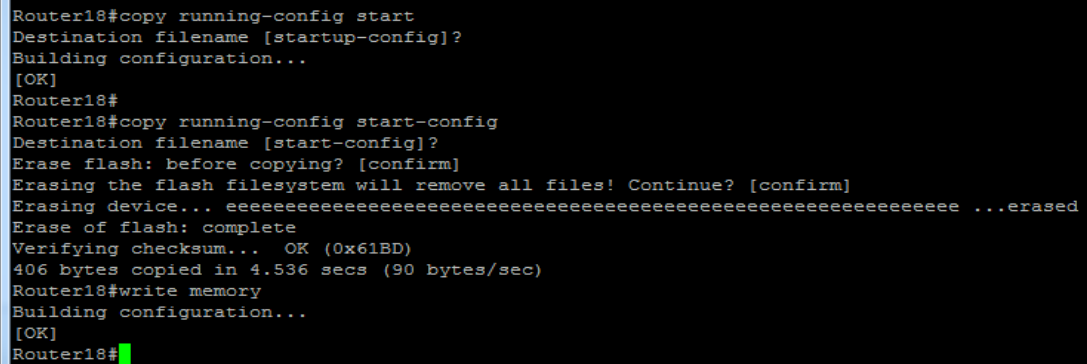
b. Print out a screenshot from Ethereal or Wireshark packet analyzer that shows the decoded network routes being advertised by your router. You will need to expand and drill down into the packet decodes to see this information.

4. (20 pts) Save the router's current configuration from main memory to NVRAM.

a. What Cisco command did you use to accomplish this?

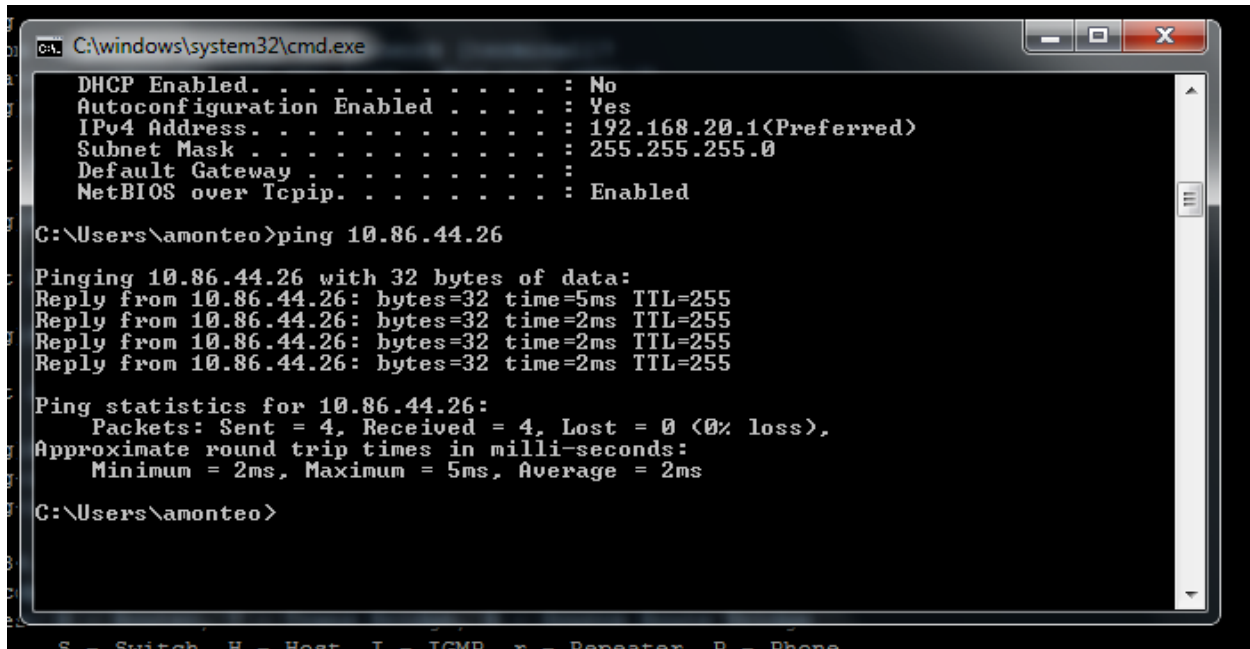
Command: copy running-configuration start
copy running-configuration start-configuration
write memory

b. Print out a copy of this configuration file.



```
Router18#copy running-config start
Destination filename [startup-config]?
Building configuration...
[OK]
Router18#
Router18#copy running-config start-config
Destination filename [start-config]?
Erase flash: before copying? [confirm]
Erasing the flash filesystem will remove all files! Continue? [confirm]
Erasing device... ..erased
Erase of flash: complete
Verifying checksum... OK (0x61BD)
406 bytes copied in 4.536 secs (90 bytes/sec)
Router18#write memory
Building configuration...
[OK]
Router18#
```

5. (20 pts) Connect your console cable from your computer's serial port to the console port of your Ethernet switch and configure its hostname to SwitchXY (where XY is your group number). Also configure the IP address of your switch to the value shown in the network topology drawing. Verify that you can ping the IP address of your switch from the command prompt of your computer. a. Submit a screenshot of output of "show cdp neighbors" and "show mac address-table" from your switch. Circle the mac address that belongs to your computer. b. Submit a copy of the configuration file of your Ethernet switch.



```
C:\windows\system32\cmd.exe

DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . : Yes
IPv4 Address. . . . . : 192.168.20.1(Preferred)
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . :
NetBIOS over Tcpip. . . . . : Enabled

C:\Users\amonte>ping 10.86.44.26

Pinging 10.86.44.26 with 32 bytes of data:
Reply from 10.86.44.26: bytes=32 time=5ms TTL=255
Reply from 10.86.44.26: bytes=32 time=2ms TTL=255
Reply from 10.86.44.26: bytes=32 time=2ms TTL=255
Reply from 10.86.44.26: bytes=32 time=2ms TTL=255

Ping statistics for 10.86.44.26:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 5ms, Average = 2ms

C:\Users\amonte>
```

S = Switch, H = Host, I = IGMP, r = Repeater, P = Phone

COM1 - PuTTY

Switch18(config)#show cdp neighbour

% Invalid input detected at '^' marker.

Switch18(config)#show cdp neighbours

% Invalid input detected at '^' marker.

Switch18(config)#show cdp neighbors

% Invalid input detected at '^' marker.

Switch18(config)#show cdp neighbors

% Invalid input detected at '^' marker.

Switch18(config)#Switch06(config)#interface vlan 1

% Invalid input detected at '^' marker.

Switch18(config)#interface vlan 1

Switch18(config-if)#ip address 10.86.44.26 255.255.255.0

Switch18(config-if)#end

Switch18#

*Mar 5 23:25:00.989: %SYS-5-CONFIG_I: Configured from console by console

Switch18#show cdp neighbors

Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge

S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone

| Device ID | Local Intrfce | Holdtme | Capability | Platform | Port ID |
|-----------------------------------|---------------|---------|------------|-----------|-----------|
| Router18 | Fas 1/0/3 | 166 | R | 1601 | Eth 0 |
| cla-et-c256a-3750r.calstatela.edu | Fas 1/0/4 | 176 | R S I | WS-C3750V | Fas 1/0/6 |

Switch18#show mac address-table

Mac Address Table

| Vlan | Mac Address | Type | Ports |
|------|----------------|--------|-------|
| All | 0100.0ccc.cccc | STATIC | CPU |
| All | 0100.0ccc.cccd | STATIC | CPU |
| All | 0180.c200.0000 | STATIC | CPU |
| All | 0180.c200.0001 | STATIC | CPU |
| All | 0180.c200.0002 | STATIC | CPU |
| All | 0180.c200.0003 | STATIC | CPU |
| All | 0180.c200.0004 | STATIC | CPU |
| All | 0180.c200.0005 | STATIC | CPU |
| All | 0180.c200.0006 | STATIC | CPU |
| All | 0180.c200.0007 | STATIC | CPU |
| All | 0180.c200.0008 | STATIC | CPU |
| All | 0180.c200.0009 | STATIC | CPU |
| All | 0180.c200.000a | STATIC | CPU |
| All | 0180.c200.000b | STATIC | CPU |
| All | 0180.c200.000c | STATIC | CPU |
| All | 0180.c200.000d | STATIC | CPU |
| All | 0180.c200.000e | STATIC | CPU |
| All | 0180.c200.000f | STATIC | CPU |
| All | 0180.c200.0010 | STATIC | CPU |

Switch18#



ycle Bin

Wireshark Legacy

ernet

Wireshark

C:\windows\system32\cmd.exe

DHCP Enabled. : No

Autoconfiguration Enabled : Yes

IPv4 Address. : 192.168.20.1(Preferred)

Subnet Mask : 255.255.255.0

Default Gateway :

NetBIOS over Tcpip. : Enabled

C:\Users\anonteo>ping 10.86.44.26

Pinging 10.86.44.26 with 32 bytes of data:

Reply from 10.86.44.26: bytes=32 time=5ms TTL=255

Reply from 10.86.44.26: bytes=32 time=2ms TTL=255

Reply from 10.86.44.26: bytes=32 time=2ms TTL=255

Reply from 10.86.44.26: bytes=32 time=2ms TTL=255

Ping statistics for 10.86.44.26:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 2ms, Maximum = 5ms, Average = 2ms

C:\Users\anonteo>

COM1 - PuTTY

% Invalid input detected at '^' marker.

Switch18(config)#interface vlan 1

Switch18(config-if)#ip address 10.86.44.26 255.255.255.0

Switch18(config-if)#end

Switch18#

*Mar 5 23:25:00.989: %SYS-5-CONFIG_I: Configured from console by console

Switch18#show cdp neighbors

Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge

S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone

| Device ID | Local Intrfce | Holdtme | Capability | Platform | Port ID |
|-----------------------------------|---------------|---------|------------|-----------|-----------|
| Router18 | Fas 1/0/3 | 166 | R | 1601 | Eth 0 |
| cla-et-c256a-3750r.calstatela.edu | Fas 1/0/4 | 176 | R S I | WS-C3750V | Fas 1/0/6 |

Switch18#show mac address-table

Mac Address Table

| Vlan | Mac Address | Type | Ports |
|------|----------------|--------|-------|
| All | 0100.0ccc.cccc | STATIC | CPU |
| All | 0100.0ccc.cccd | STATIC | CPU |
| All | 0180.c200.0000 | STATIC | CPU |
| All | 0180.c200.0001 | STATIC | CPU |
| All | 0180.c200.0002 | STATIC | CPU |
| All | 0180.c200.0003 | STATIC | CPU |
| All | 0180.c200.0004 | STATIC | CPU |
| All | 0180.c200.0005 | STATIC | CPU |
| All | 0180.c200.0006 | STATIC | CPU |
| All | 0180.c200.0007 | STATIC | CPU |
| All | 0180.c200.0008 | STATIC | CPU |
| All | 0180.c200.0009 | STATIC | CPU |
| All | 0180.c200.000a | STATIC | CPU |
| All | 0180.c200.000b | STATIC | CPU |
| All | 0180.c200.000c | STATIC | CPU |
| All | 0180.c200.000d | STATIC | CPU |
| All | 0180.c200.000e | STATIC | CPU |
| All | 0180.c200.000f | STATIC | CPU |
| All | 0180.c200.0010 | STATIC | CPU |

Switch18#